

BULLETIN #5

WHO's emergency response to artemisinin resistance

SEPTEMBER 2016

54%**REDUCTION IN
MALARIA CASES
OVER 3 YEARS**

SHARP DECLINE IN MALARIA CASES AND DEATHS SEEN ACROSS THE GMS

Increased access to malaria prevention, diagnostics and treatment is having a direct impact on trends in the disease across the Greater Mekong Subregion (GMS). According to the latest WHO data, the six GMS countries cut their malaria incidence¹ by more than 54% between 2012 and 2015 (Figure 1). Malaria mortality is also rapidly declining, with an 84% drop in deaths² reported since 2012 (Figure 2).

Myanmar and Viet Nam achieved reductions in malaria cases of 62% and 52%, respectively, from 2012 to 2015.³ Significant declines were also seen in Thailand (24%) and Cambodia (18%) over this same three-year period. China's Yunnan Province reported 613 cases of malaria in 2015, including only 23 locally-acquired cases of the disease.

Across the subregion, migrant and mobile populations (MMPs) working outdoors in construction, mining and plantation sites are at high risk of malaria infection and play a crucial role in transmission of the disease. The targeted provision of core malaria tools for MMPs and other at-risk populations – including long-lasting insecticide treated nets (LLINs), rapid diagnostic tests (RDTs) and artemisinin-based combination therapies (ACTs) – is clearly yielding results.

¹ Malaria incidence refers to the rate of new cases of the disease.

² In 2012, 539 deaths were reported in the six GMS countries compared to 87 deaths in 2015.

³ Myanmar reported 182 452 cases of malaria in 2015, down from 480 586 cases in 2012. Viet Nam reported 9331 cases of malaria in 2015 compared to 19 638 cases in 2012.

FIGURE 1.
Malaria cases in the six GMS countries

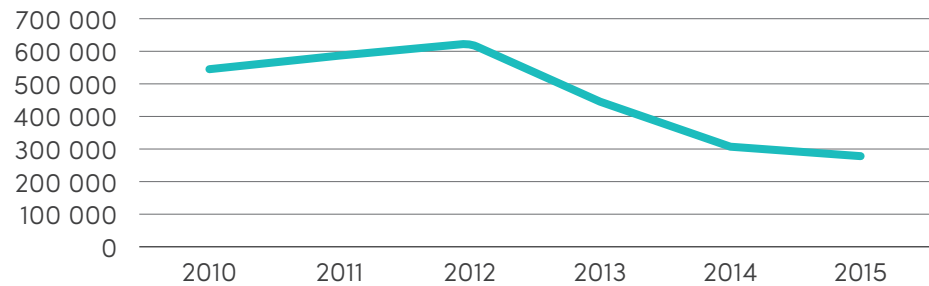
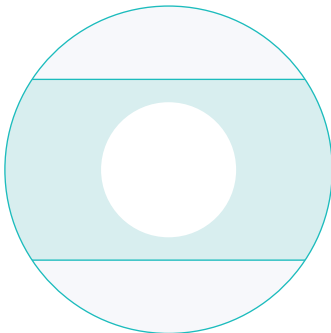
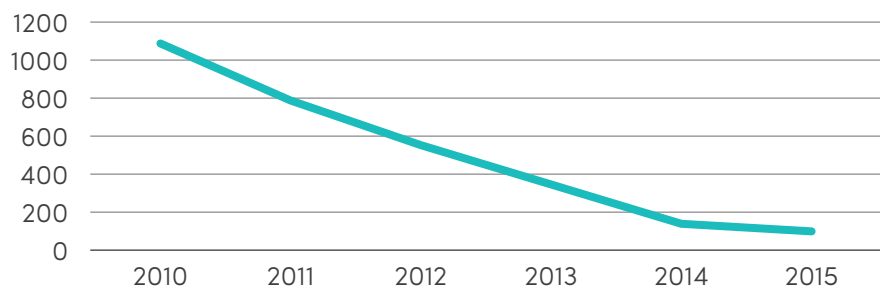


FIGURE 2.
Malaria deaths in the six GMS countries



RECENT OUTBREAKS IN LAO PDR

In recent years, Lao People's Democratic Republic (PDR) has seen several resurgences of malaria. A sharp rise in cases in 2012 and 2014 (Figure 3) can likely be attributed to improved case reporting and to an increase in MMPs working in forested areas in the country's southern provinces. The decline in cases seen in 2015 resulted from better case detection among at-risk populations and intensive malaria control efforts in high-transmission areas.

The mass distribution of LLINs has been a central pillar of Lao PDR's response to malaria. In the first six months of 2015 the government distributed more than 200 000 insecticide-treated nets in Saravan, Champasak, Sekong and Attapeu, ensuring 82% coverage for the population in these high-burden provinces. In 2016, the government aims to provide access to LLINs for 100% of the population in endemic areas; a special effort will be made to reach MMPs in endemic areas.

“Lao PDR has taken important steps to control the malaria outbreaks in its southern provinces,” said Dr Chitsavang Chanthavisouk, Technical Officer at the WHO Country Office in Lao PDR. “As the country accelerates towards elimination, increased support from major funders will be critically important. Access to core interventions must be expanded, particularly for migrant and mobile populations.”

FIGURE 3.

Malaria cases compared to 2010 baseline (percentage)

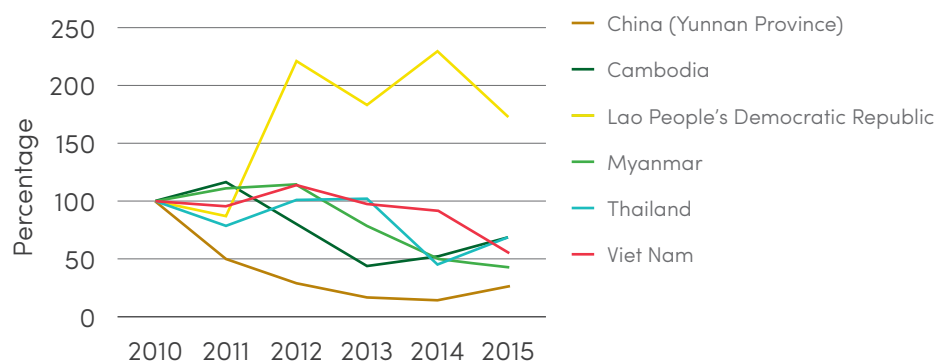
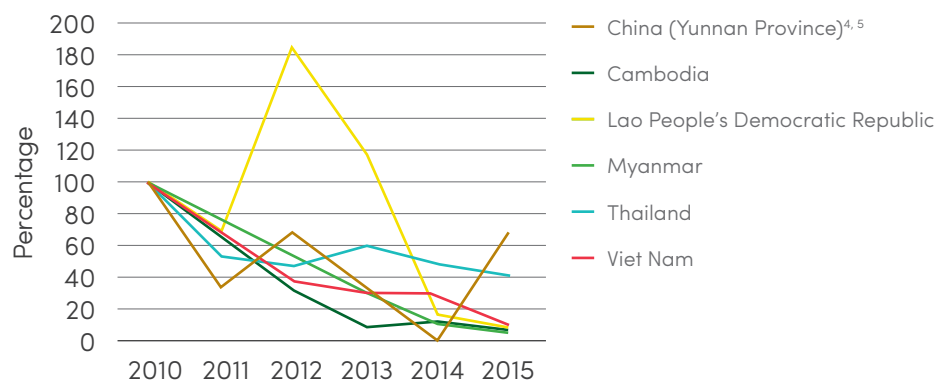


FIGURE 4.

Malaria deaths compared to 2010 baseline (percentage)



⁴ All deaths reported for the period 2013–2015 in Yunnan Province were among individuals who contracted malaria outside China.

⁵ Nationwide, 20 deaths were reported in China in 2015.



2020

**TARGET DATE FOR
ELIMINATION**

CHINA ACCELERATING TOWARD ELIMINATION

China has set a national target of eliminating malaria by 2020. In a visit to the country's Jiangsu Province in October 2015, Dr Pedro Alonso, Director of the WHO Global Malaria Programme, noted the country's swift progress towards that goal.

"I was impressed by China's bullet trains, which race from Shanghai to Jiangsu Province at 300 kph," said Dr Alonso. "I was equally impressed by the country's speedy advances against malaria, which have reduced locally acquired malaria cases from 27 million in the early 1970s to less than 40 this year," he added.⁶

This stunning success has been driven, in part, by a focused surveillance strategy called "1-3-7", rolled out nationally in 2012. The strategy calls for the rapid reporting of malaria cases within one day, confirmation and case investigation within three days, and targeted action within seven days.

Today, transmission of malaria is largely confined to the areas of China's Yunnan Province that border Myanmar; in 2015, 23 locally acquired cases were reported in this Province. Tibet and the Provinces of Hainan and Liaoning also reported several cases of local malaria transmission.⁷ National authorities are focusing now on finishing the job of eliminating malaria nationwide and preventing reintroduction of the disease.

Achieving the goal of elimination will be a challenge: In recent years, China has battled a large number of imported cases of malaria, primarily from sub-Saharan Africa but also from neighbouring Myanmar. China's malaria control teams are working hard to ensure that cases of the disease imported by visitors and migrants are identified and treated rapidly to prevent a resurgence of local transmission.

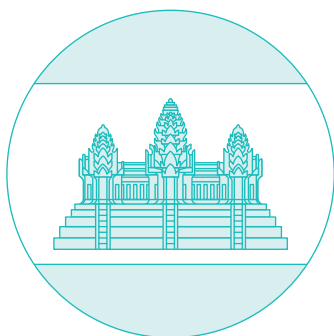
To speed malaria elimination along the China-Myanmar border, the two countries initiated a cross-border strategic plan in March 2016. The strategy includes approaches specifically tailored for mobile and migrant populations including, for example, the provision of malaria diagnosis and treatment services at international border crossings and key migration transit points.

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- Dr Pedro Alonso, Director of the WHO Global Malaria Programme

⁶ In 2015, China reported 39 locally acquired cases of malaria and 20 deaths nationwide.

⁷ In 2015, Tibet reported 1 locally acquired case of *P. vivax* and 6 unclassified cases; Hainan reported 1 locally acquired case of *P. vivax* and 6 cases of *P. malariae*; and Liaoning reported 2 indigenous cases of *P. vivax*.



18%

**DECLINE IN
MALARIA CASES
SEEN NATIONWIDE
BETWEEN 2012
AND 2015**

CAMBODIA LAUNCHES NATIONAL ACTION FRAMEWORK

Between 2012 and 2015, Cambodia cut its malaria cases by 18%. But transmission continues in 21 of the country's 25 provinces, with more than half the population still at risk. A large share (70%) of Cambodia's malaria burden is concentrated in the north-eastern region of the country, primarily along the forested areas bordering Viet Nam, Lao PDR and Thailand.

In January 2016, Cambodia launched a five-year action elimination framework after broad consultation with Ministry of Health staff as well as technical, implementing and financial partners. Developed with support from WHO, the framework aims to eliminate *P. falciparum* malaria by 2020 and *P. vivax* malaria by 2025.

WHO has been working with Cambodia and other countries in the subregion to ensure that their national strategies are aligned with the *Strategy for malaria elimination in the Greater Mekong Subregion*. Table 1 provides an overview of the status of national malaria elimination planning in the six GMS countries.

NEW FRAMEWORK

In areas with low transmission of malaria, Cambodia will establish a robust surveillance system that allows for any cases to be immediately reported, investigated and treated. In high burden areas, the country aims to expand access to diagnosis and treatment while also ensuring universal access to key vector control tools.

A special effort will be made to reach people at high risk of malaria infection, especially mobile and migrant populations. To that end, village malaria workers (VMWs) can play a critical role in ensuring that malaria cases are detected, treated and reported to the national surveillance system. Over the course of the five-year action plan, Cambodia aims to place at least one VMW in all villages in malaria-risk areas, including in cross-border sites considered at risk for transmission.

Cambodia has pioneered other innovative approaches to malaria control, such as setting up "malaria corners" in work sites for migrant and mobile populations that provide ready access to information and services on malaria prevention and treatment. In 2015, the national malaria programme provided approximately 29 000 LLINs and 9000 insecticide-treated hammock nets for MMPs in malaria-affected areas.

ADDRESSING DRUG RESISTANCE

Cambodia introduced ACTs on a national scale in 2000. By 2008, there were confirmed reports of *P. falciparum* resistance to artemisinin along the Cambodia–Thailand border. Resistance to artemisinin has since spread from Cambodia to four other countries in the subregion.

In view of the threat of antimalarial drug resistance, protecting the efficacy of ACTs as the first-line treatment for *P. falciparum* malaria is an urgent priority. With support from WHO and partners, Cambodia and other countries in the subregion have developed strategies to phase out the use of oral artemisinin-based monotherapies (oAMT) and to remove from markets antimalarial medicines that do not meet WHO prequalification standards.

According to a recent survey by Population Services International in Cambodia, antimalarial medicines were sold at 858 drug outlets⁸ in Cambodia in 2015; of these, only one oAMT product was found in one private sector outlet.

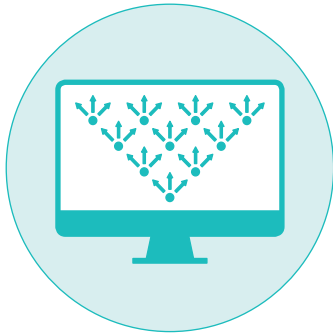
TABLE 1.
Tracking progress towards malaria elimination in the GMS countries

COUNTRY	STATUS OF NATIONAL MALARIA ELIMINATION PLANS	NATIONAL MALARIA ELIMINATION TARGET DATE	NUMBER OF MALARIA CASES AT THE END OF 2015 ⁹
Cambodia	"Malaria Elimination Action Framework (2016–2020)" launched in January 2016.	2025	33 314
China (Yunnan Province)	"Malaria Elimination Strategy 2015–2020" completed in 2015.	2020	613 ¹⁰
Lao People's Democratic Republic	"National Strategic Plan for Malaria Control and Elimination (2016–2020)" developed and under the process of endorsement by the Ministry of Health.	2030	36 059
Myanmar	"National Strategic Plan for Intensifying Malaria Control and Accelerating Progress towards Malaria Elimination 2016–2020" developed and under the process of endorsement by the Ministry of Health.	2030	182 452
Thailand	"National Malaria Elimination Strategy 2017–2026" launched in April 2016.	2024	24 850
Viet Nam	"National Strategy for Malaria Prevention, Control and Elimination 2011–2020" in place; detailed elimination action plan finalized.	2030	9331

⁸ These outlets included health facilities, pharmacies, drug stores, general retail outlets, and mobile drug vendors.

⁹ Numbers provided include both imported and locally acquired cases of malaria.

¹⁰ Of the 613 malaria cases reported in China's Yunnan Province in 2015, only 23 were locally acquired.



WHO LAUNCHES NEW DATA SHARING PLATFORM

A new web-based platform, launched in May 2016 with support from WHO and the Global Fund to Fight AIDS, Tuberculosis and Malaria, is helping countries in the GMS enter, analyse and use timely malaria-related data. Through the platform, WHO staff and national malaria control programme (NMCP) officers in affected countries are able to visualize and interpret a set of standardized malaria indicators.¹¹

The platform will serve as an important tool for aligning and harmonizing malaria surveillance and response strategies across the subregion, and globally. Data collected through the platform will be analysed by WHO and NMCP staff; these analyses will help NMCPs strengthen their surveillance systems through the identification of high-transmission areas and seasons. Countries will receive technical assistance that will help them better target the delivery of interventions for effective malaria control.

“Malaria surveillance is a cornerstone of programme planning,” said Dr Maru Aregawi, Interim Coordinator of the WHO ERAR hub. “It helps countries map disease burden and identify gaps in coverage of key malaria control tools. This new data sharing platform will bring us one step closer to our common goal of malaria elimination in the Greater Mekong Subregion.”

Experience gained through the new tool will be useful not only for countries within the GMS but also for countries in other malaria-endemic regions and subregions.

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- Dr Maru Aregawi, Interim Coordinator of the WHO ERAR hub

¹¹ Data is collected at the subnational level. The agreed data elements and indicators cover burden reduction and elimination phases, including disaggregation by gender, migrant and mobile populations, as well as data source (public sector, community and private sector) by locality.



24%

**DECLINE IN
MALARIA CASES
SEEN NATIONWIDE
BETWEEN 2012 AND
2015**

THAILAND LAUNCHES A NATIONAL MALARIA STRATEGY

Thailand has set its sights on “Ending malaria for good” – the global theme of this year’s World Malaria Day. Speaking at a campaign launch event in Bangkok on 25 April, Dr Piyasakol Sakolsatayadorn, Minister of Public Health, announced a target date for national malaria elimination of 2024.

The country is moving swiftly towards that goal. Between 2000 and 2015, Thailand reduced its malaria cases from 150 000 to 24 850 – a decline of approximately 85%. In the last three years alone, malaria cases have declined by 24%.

To support the goal of elimination, Thailand has introduced a 10-year national strategy that calls for harnessing innovation and new technologies; strengthening collaboration among national and global stakeholders; and empowering people to protect themselves from malaria. The plan has a national budget of 2.3 billion Baht (US\$ 65.1 million) for the period 2017–2021.

But serious challenges remain. The malaria burden in Thailand remains heavily concentrated among isolated ethnic groups and migrant forest workers living in difficult-to-access areas along the country’s borders with Myanmar and Cambodia. Reaching these vulnerable populations will require targeted malaria control services and greater cross-border collaboration.

Along the Thai–Cambodia border, *P. falciparum* has become resistant to nearly all available antimalarial medicines. The development and spread of artemisinin resistance in Thailand, and in many areas across the subregion, has reached alarming levels.



VIET NAM NEARING THE GOAL OF ELIMINATION

In 1991, a devastating malaria outbreak in Viet Nam resulted in more than 1 million confirmed cases of the disease and nearly 5000 deaths. Twenty-five years later, the country reported just over 9000 cases of the disease and three malaria-related deaths.

Since 2012, Viet Nam has reduced its malaria burden at an accelerated rate, with a 52% decline in cases reported nationwide.

52%

**DECLINE IN
MALARIA CASES
REPORTED IN
VIET NAM SINCE
2012**

A key to this success was the wide scale-up and targeted use of insecticide-treated nets and indoor spraying. A robust surveillance system has allowed for the early detection of malaria and a timely response. Treatment has become widely available, especially in drug-resistant areas.

Progress was also made possible through the sustained commitment of government and affected communities, coupled with a strong health system and an effective grassroots malaria network.

Now, the country is aiming to finish the job. According to Viet Nam's national malaria strategy – known as the “Masterplan” – the government has committed VND 1673 billion (US \$75 million) to control and eliminate malaria by 2030.

Dr Tran Thanh Duong, Director of the National Malaria Programme, says Viet Nam is on track to meet this goal. “With strong financial and technical support from WHO and international agencies, and the commitment of the Viet Nam government, malaria will be eliminated in the country by 2030,” he told WHO.

But the fight is far from over. Ethnic minorities and migrant workers are disproportionately affected by malaria, especially those living in remote and mountainous areas. As in many countries across the subregion, multidrug resistance in Viet Nam remains a major concern.

Furthermore, a funding shortfall could jeopardize hard-won gains. In a recent interview with Viet Nam News, Dr Duong expressed concern over a steady decrease in the national malaria budget. He cautioned that any further decline in funding would result in a rise in confirmed malaria cases, deaths or disease outbreak.

“With strong financial and technical support from WHO and international agencies, and the commitment of the Viet Nam government, malaria will be eliminated in the country by 2030.”

– Dr Tran Thanh Duong, Director of Viet Nam's National Malaria Programme



62%

**REDUCTION IN
MALARIA CASES
SINCE 2012**

MYANMAR ACHIEVES A STEADY REDUCTION IN MALARIA CASES

Myanmar has made impressive strides in lowering its burden of malaria. Since 2012, the country has reduced its malaria cases by 62%, from approximately 480 000 to 182 000. In that same three-year period, the number of malaria deaths fell from 403 to 37.

The WHO Country Office in Myanmar credits the decline in cases and deaths to a combination of factors, including the promotion and use of LLINs; the introduction of RDTs; early detection of malaria through a network of community-based volunteers; the availability and use of ACTs; a gradual expansion in healthcare coverage; and the availability of financial support, especially from the Global Fund.

“Data from 2012 onwards is relatively robust and demonstrates a steady and impressive reduction in caseload year by year,” says Dr Badri Thapa, team leader for malaria in the WHO Country Office in Myanmar. “The incidence of reported malaria has dropped by 62% since 2012, despite improved case detection and improved reporting,” he added.

Myanmar faces a number of challenges in its efforts to eliminate malaria. Continued progress will hinge on the country’s ability to reach populations at high risk of malaria, especially migrant and mobile workers living in hard-to-reach areas. Collaboration with national partners and neighbouring countries must be strengthened. And preventing the spread of artemisinin-resistant malaria parasites remains an urgent priority.

Myanmar aims to eliminate *P. falciparum* malaria by 2025 and all species of human malaria by 2030. The country recently developed a national strategic plan for malaria covering the period 2016 to 2020.

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THE WHO EMERGENCY RESPONSE TO ARTEMISININ RESISTANCE

Global progress in malaria control is threatened by the rapid development and spread of antimalarial drug resistance. To date, parasite resistance to artemisinin – the core compound of the best available antimalarial medicines – has been detected in five countries of the Greater Mekong Subregion (GMS): Cambodia, Lao People's Democratic Republic (PDR), Myanmar, Thailand and Viet Nam.

P. falciparum is the parasite that accounts for most malaria cases and deaths in the GMS; in some areas of the subregion, resistance of *P. falciparum* to artemisinin, and to other antimalarial medicines, has reached alarming levels. Urgent action is needed to fully eliminate resistant strains of the parasite and to protect the efficacy of artemisinin-based combination therapies.

In 2013, WHO launched *The Emergency response to artemisinin resistance in the Greater Mekong Subregion*; the three-year framework guided a major scale-up of strategies to combat multidrug resistance in affected countries. To support containment efforts, and coordinate multi-partner action, WHO established a dedicated regional hub in Phnom Penh, Cambodia.

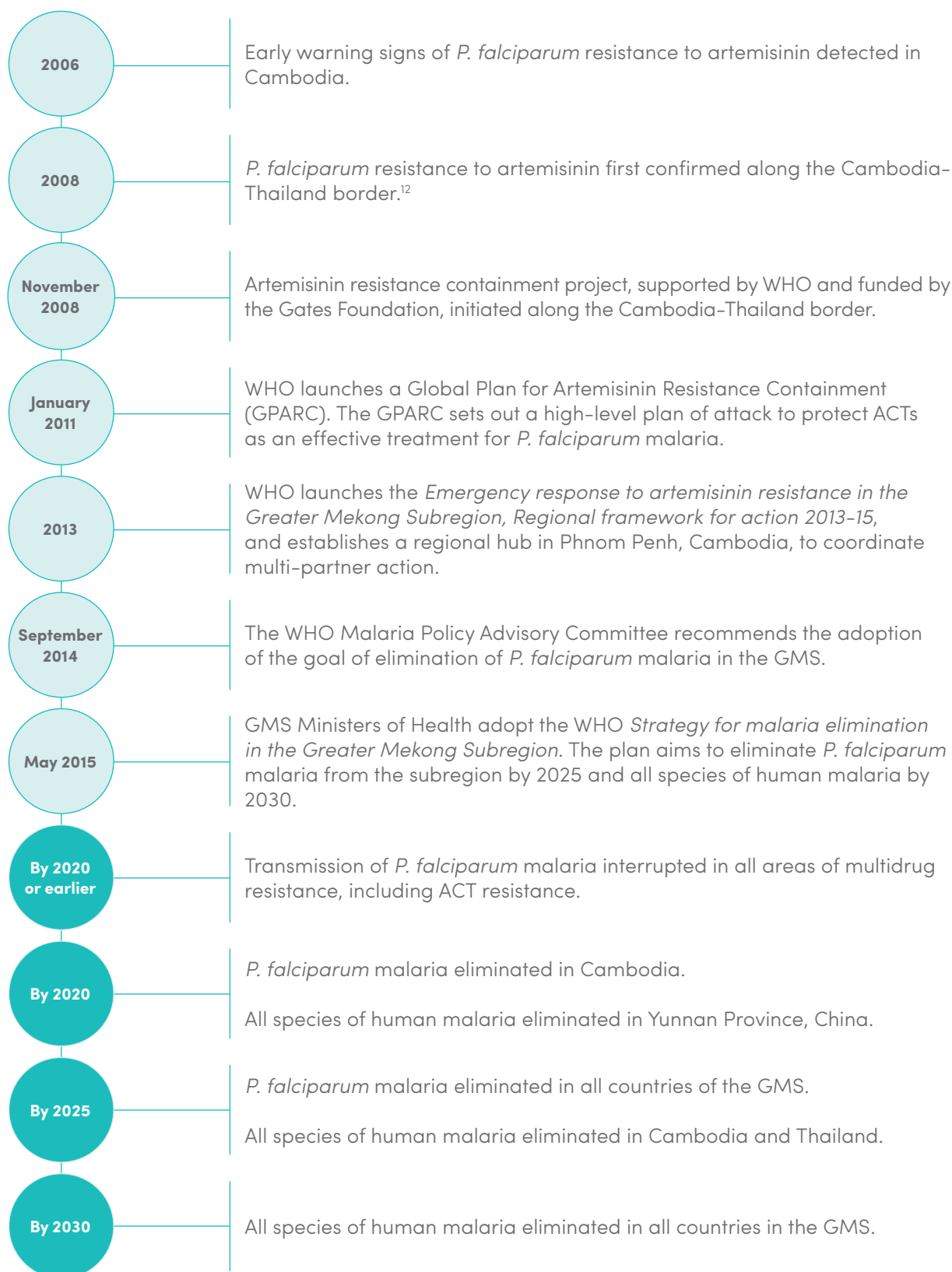
As the malaria burden declines across the subregion – and as new evidence emerges on how artemisinin resistance appears and spreads – WHO and affected countries have reoriented their strategy from one of containment to elimination. In May 2015, GMS Ministers of Health adopted a 15-year action plan aligned with the *WHO Global Technical Strategy for Malaria 2016–2030*.

The *Strategy for malaria elimination in the Greater Mekong Subregion* aims to eliminate *P. falciparum* malaria from the GMS by 2025 and all species of human malaria by 2030. In areas where transmission has been interrupted, the goal is to maintain malaria-free status and prevent reintroduction of the disease.

As the lead global technical agency, WHO will continue to support GMS countries as they work to counter multidrug resistance and eliminate malaria. With a global network of malaria experts based in all affected countries in the subregion, at regional offices in Delhi and Manila, and at WHO headquarters in Geneva, the Organization is uniquely poised to guide this response. WHO's emergency response in the GMS is part of a broader effort to address the global threat of antimicrobial resistance.

WHO's work on antimalarial drug resistance in the GMS is supported through generous contributions from the Australian Department of Foreign Affairs and Trade (DFAT), the Bill & Melinda Gates Foundation, the Global Fund to Fight AIDS, Tuberculosis and Malaria, and U.S. Agency for International Development (USAID).

TIMELINE AND KEY TARGETS



¹² Retrospective analysis has shown that artemisinin resistance likely emerged as early as 2001, before the widespread deployment of ACTs.